

Channel margins-cobble bars/banks

Coltsfoot-Cooley’s betony, PEFR5-STCO14 p. 56

Coast boykinia-oval leaved mitrewort, BOOC2-MIOV..... p. 61

Foamflower, TITR p. 66

Stinkcurrant/coltsfoot, RIBR/PEFR5 p. 68



Petasites frigidus-Stachys cooleyae
Coltsfoot-Cooley's betony
PEFR5-STCO14

N=45 (MHNF 27, WNF 16, EBLM 2)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-seedlings			
<i>Alnus rubra</i>	Red alder	51	13
<i>Thuja plicata</i>	Western redcedar	27	3
Shrubs			
<i>Acer circinatum</i>	Vine maple	40	19
<i>Rubus spectabilis</i>	Salmonberry	33	2
<i>Ribes bracteosum</i>	Stink currant	31	2
Herbs			
<i>Petasites frigidus</i>	Coltsfoot	87	20
<i>Galium triflorum</i>	Sweetscented bedstraw	78	2
<i>Stachys cooleyae</i>	Cooley's betony	64	10
<i>Claytonia sibirica</i>	Siberian miner's lettuce	58	1
<i>Athyrium filix-femina</i>	Lady fern	56	6
<i>Tolmiea menziesii</i>	Piggyback plant	56	4
<i>Oxalis</i>	Sorrel	42	5
<i>Mimulus guttatus</i>	Yellow monkeyflower	36	2
<i>Lactuca muralis</i>	Wall-lettuce	33	1
<i>Montia parvifolia</i>	Streambank springbeauty	31	1

Elevations: 920 to 3520 feet (average 2,370 feet).

Community: Coltsfoot-Cooley's betony is the most common streamside community in the sample, although none was found in Salem BLM plots. This is an herb dominated community which can support very young red alder or western redcedar. There is often an overhanging vine maple canopy, but the shrub layer is generally sparse. Coltsfoot and Cooley's betony are the dominant herb species, with sweetscented bedstraw, Siberian miner's lettuce, lady fern, and piggyback plant also common.

Geomorphic environment: Most plots were on sandy cobble bars, boulder bars, and active channel shelves, sometimes within normal high water line.

Soils are undeveloped thin layers of coarse sand over gravels, cobbles, and boulders. Average plot height above normal high water was <1 foot. Water table depths of 3-40 cm were recorded, but most sites were not deep enough to reach water table because of the coarse alluvium. Two plots included notes that thin

silty sand horizons had developed due to presence of large wood trapping the finer sediments. Another plot record noted, “A very young soil... Dense rooting of many top plants has prevented the soil from washing away. Organic deposits



Coltsfoot-Cooley's betony community: betony is flowering. Note proximity to channel.

show that plants are in residence that will not wash away, but there has still not been enough time to build a distinct illuvial horizon.”

This community is on surfaces that are under water during winter high flows. They can support stands of red alder seedlings, but seldom saplings. Moisture and nutrient retention are poor, due to limited accumulation of fine sediments and organic matter.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	69%
Wetland indicators among dominant species	70% (range 25-100%)

Similar types: The Coltsfoot-Cooley's betony community is similar to the Coltsfoot group (Sitka alder/coltsfoot and Coltsfoot-common horsetail) which is largely found within the highwater line. The Coltsfoot-Cooley's betony type has a wider range of species that can occur on floodplains. It appears to bridge the in-channel and channel margin/active floodplain transition.

Click on a creek name in the table below to see the valley cross sections that show where PEFR5-STCO14 occurs in relation to other plant associations.

Valley cross sections showing PEFR5-STCO14
Walker creek
Loon creek
S Fork McKenzie #1
Boone creek
E Fork S Fork McKenzie #2

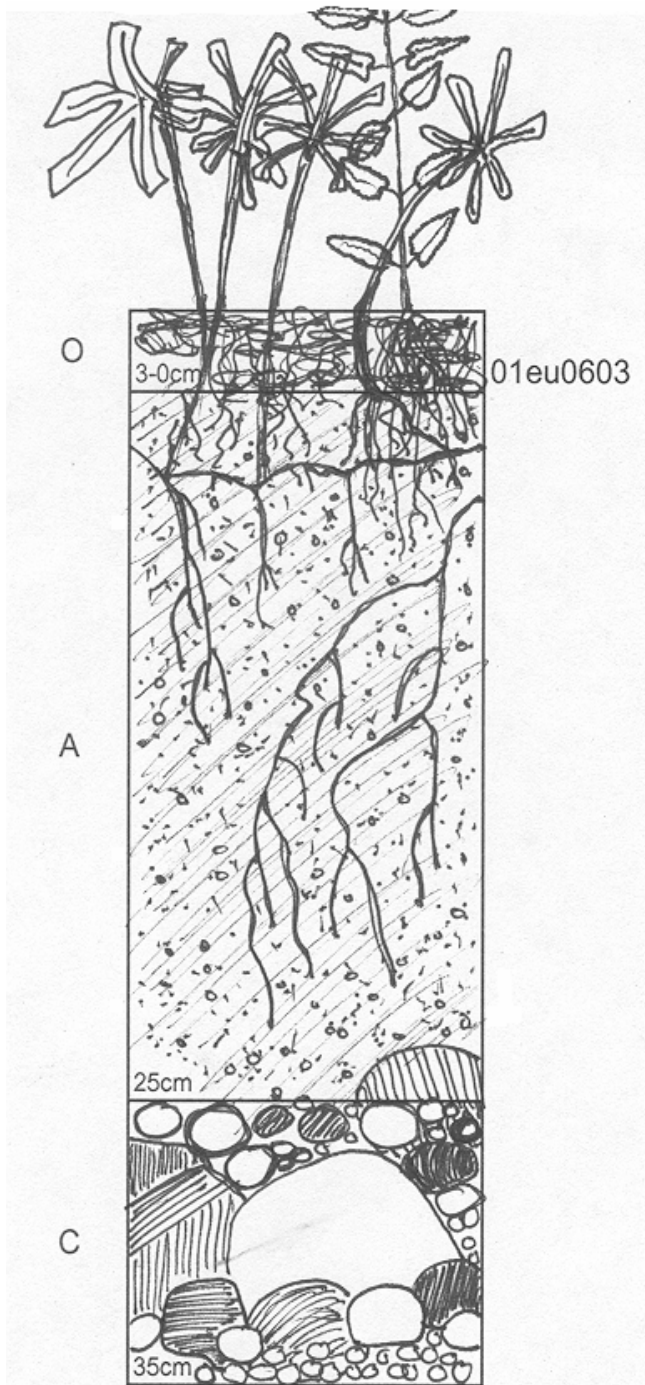
Non-natives: Thirteen exotic species were found in plots (38% of the sample). Wall-lettuce was most common, occurring in a third of plots.

EXOTIC	COMMON NAME	CONSTANCY %	PLOTS	TYPICAL COVER %
<i>Lactuca muralis</i>	Wall-lettuce	33	15	1
<i>Leucanthemum vulgare</i>	Oxeye daisy	4	2	1
<i>Rumex crispus</i>	Curled dock	4	2	Tr
<i>Hypochaeris radicata</i>	Hairy cat's ear	4	2	Tr
<i>Digitalis purpurea</i>	Foxglove	2	1	10
<i>Ranunculus repens</i>	Creeping buttercup	2	1	7
<i>Agrostis capillaris</i>	Colonial bentgrass	2	1	3
<i>Poa palustris</i>	Fowl bluegrass	2	1	1
<i>Cirsium vulgare</i>	Bull thistle	2	1	1
<i>Geranium columbinum</i>	Longstalk cranesbill	2	1	1
<i>Senecio jacobaea</i>	Tansy ragwort	2	1	1
<i>Cirsium arvense</i>	Canada thistle	2	1	Tr
<i>Cerastium fontanum ssp. vulgare</i>	Big chickweed	2	1	Tr

Soil illustration:PEFR5-STCO14

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	3					20	30
A	25	7.5YR2.5/3	LS	gravel	15	15	15
C			R	cobble	70	10	3

Total Depth: 35cm. Depth Limit: ~35cm.



A 3cm-shallow O horizon appears to be mostly last years sticks, leaves and dead moss. This plot may not be flooded every year, but not less than every five years. The A horizon is deep but very young, of course. The reason there is "25cm of loamy sand" is simply because there has not been enough time for illuviation to stratify the profile into more than one horizon. Fairly dense rooting of perennial / rhizomatous herb species gives some chance of retaining the A horizon in mild flooding, but a good wet winter could easily wax the whole plot. The C horizon is simply cobble and gravel, an old part of the streambed. Mostly basalt and sandstone with assorted others.



Coltsfoot-Cooley's betony: herbaceous cobble community inundated yearly

Other studies: This community is somewhat similar to two types previously been described for the Mt. Hood NF in Diaz and Mellen (1996): the PEFR2 Plant Community (Ecoclass FW4226) and the STCO4-MIGU Plant Association (Ecoclass FW4230).

Boykinia occidentalis-Mitella ovalis
Coast boykinia-oval-leaved mitrewort
BOOC2-MIOV

N=22 (WNF 13, EBLM 5, SBLM 4)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	18	37
Trees-seedlings			
<i>Alnus rubra</i>	Red alder	27	22
<i>Tsuga heterophylla</i>	Western hemlock	27	12
<i>Thuja plicata</i>	Western redcedar	18	3
Herbs			
<i>Mitella ovalis</i>	Oval-leaved mitrewort	100	4
<i>Boykinia occidentalis</i>	Coastal boykinia	95	14
<i>Galium triflorum</i>	Sweetscented bedstraw	91	3
<i>Athyrium filix-femina</i>	Lady fern	64	6
<i>Tolmiea menziesii</i>	Piggyback plant	55	15
<i>Oxalis</i>	Sorrel species	50	12
<i>Stachys</i>	Betony species	50	11
<i>Carex deweyana</i>	Dewey's sedge	50	11
<i>Adiantum pedatum</i>	Maidenhair fern	50	4
<i>Petasites frigidus</i>	Coltsfoot	45	7
<i>Lactuca muralis</i>	Wall-lettuce	45	5
<i>Tiarella trifoliata</i>	Coolwort foamflower	45	4
<i>Polystichum munitum</i>	Sword fern	41	4
<i>Bromus vulgaris</i>	Colombian brome	41	4
<i>Claytonia sibirica</i>	Siberian miner's lettuce	41	1

Elevations: 920-3085 feet (average 2,170 feet).

Community: Coast boykinia-oval-leaved mitrewort is an herb dominated community of low to moderate elevations. Stands of red alder saplings occur in some samples. The shrub layer is sparse; salmonberry, red huckleberry, vine maple, and trailing blackberry occur in 24-28% of the plots, but are not abundant. The herb layer is marked by dominance of saxifrages, grasses, and graminoids. Most prominent are coast boykinia, oval-leaved mitrewort, piggyback plant, Columbia brome and Dewey's sedge. Lady fern, maidenhair fern, and sword fern are typically present but low cover. Important forbs include sweetscented bedstraw, sorrel, and coltsfoot. Grasses are almost always present (95% constancy), summed cover averaging 21%. Graminoids (sedges or wood-rushes) are present in 81% of the plots, averaging 17% cover.



Coast boykinia-oval leaved mitrewort community: dominance by saxifrages, low cover of ferns is typical.

All Cascades samples were south of the North Santiam River. One plot was from Salem BLM's Warnicke Creek in the coastal Valley of the Giants area. That area has plant communities that are more similar to Cascades upland associations than most parts of the North Coast Range. Another plot from the same Warnicke Creek cluster represents a coastal variant of the Cascadian Oval-leaved huckleberry community.

Geomorphic environment: The Coastal boykinia-oval-leaved mitrewort community is found on cobble and boulder bars and islands, alluvial fans, and lower banks.

Soils are relatively shallow (average 37 cm), very gravelly horizons over gravels, cobbles and boulders. A horizons are loamy (silt loam, silty clay loams, sandy clay loams, or loamy sand). B horizons are often sandy clay loams or loamy sands.

Tree ages, geomorphic surfaces, and coarse, gravelly, shallow soils indicate that this community is frequently reset by floods and does not support mature conifers or older hardwoods. Note that the Stink currant-salmonberry/piggyback plant-oval-leaved mitrewort community has a similar distribution and gravelly substrate, but the shrub-dominated type is typically on active floodplains and low terraces.

Detailed soil descriptions show that the shrub type has more buried soils than gravel/cobble/boulder bars with the Coast boykinia-oval-leaved mitrewort community.

Wetland rating:

Community meets wetland test	No
Plots meeting wetland criteria	45%
Wetland indicators among dominant species	53% (range 20-100%)

Non-natives: Exotics occurred in 54% of the plots. Of the six species found, wall-lettuce is the most common species.

EXOTIC	COMMON NAME	CONSTANCY %	PLOTS	TYPICAL COVER %
<i>Lactuca muralis</i>	<i>Wall-lettuce</i>	45	10	5
<i>Veronica officinalis</i>	<i>Common gypsyweed</i>	9	2	3
<i>Agrostis stolonifera</i>	<i>Creeping bentgrass</i>	5	1	3
<i>Senecio jacobaea</i>	<i>Tansy ragwort</i>	5	1	3
<i>Agrostis stolonifera</i>	<i>Creeping bentgrass</i>	5	1	2
<i>Cirsium arvense</i>	<i>Canada thistle</i>	5	1	1

Other studies: This community is similar to the *Boykinia elata* Plant Community, described for the mid-Willamette NF in Campbell and Franklin (1979).

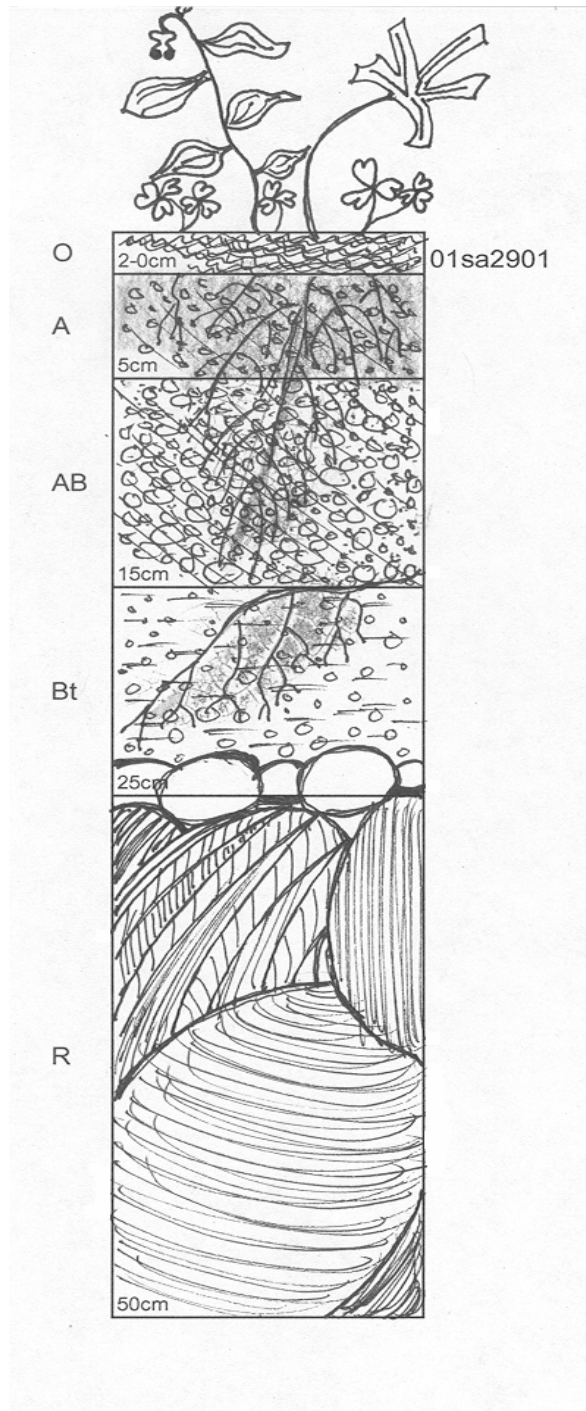
Click on a creek name in the table below to see the valley cross sections that show where BOOC2-MIOV occurs in relation to other plant associations.

Valley cross sections showing BOOC2-MIOV
Loon creek
Boone creek
Lost creek S

Soil illustration A: BOOC2-MIOV

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	2						
A	5	7.5YR2.5/1	SiL	gravel	20	10	10
AB	10	10YR2/2	SL	gravel	35	10	8
Bt	10	10YR2/2	SCL	gravel	15	8	8
R			R				

Total Depth: 25cm. Depth Limit: 25cm to R.

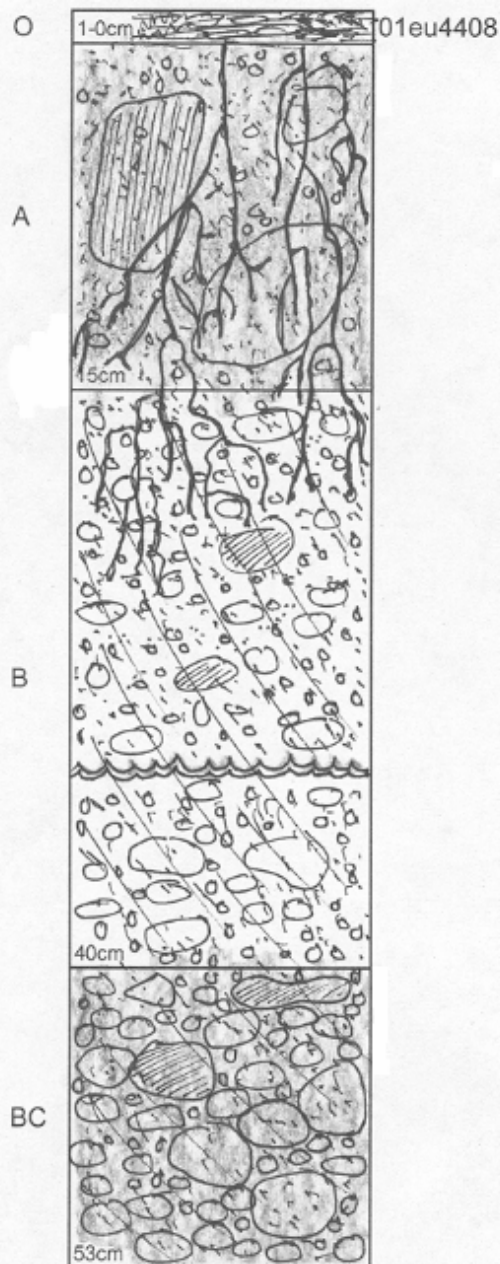


Top horizons appear to be alluvial. This site is on a shallow, dry alluvial fan with organic based A Horizon and more gravelly composition in the AB. Gravity is the main anchor now and the stream doesn't ordinarily reach this high. Clay skins and sandier texture suggest age in the Bt horizon. This Bt may have been an earlier A horizon, peacefully resting beside the stream. Alluvial / colluvial sediments settled on top and sands, fines illuviated to the Bt. Bedrock here is the same basic basalt-greenstone complex that we've seen all day, but this is the more gradual side of the stream. The way to the site today went high upslope to get around a 10-story waterfall. Even that high above the creek, alluvial cobbles and boulders exposed at the surface of the slope suggest that the creek has cut the mountain largely from the southwest (left-bank side).

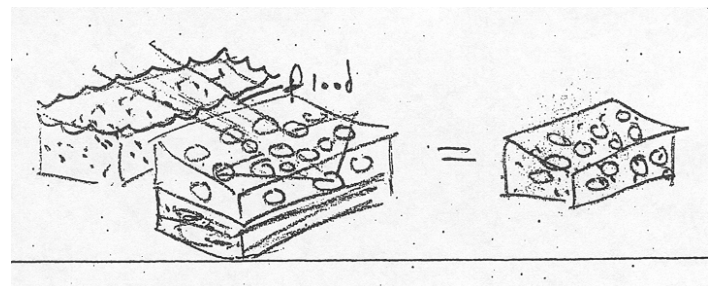
Soil illustration B: BOOC2-MIOV

O	1			cobble	30	15	
A	15	7.5YR3/1	LS	cobble / gravel	20 / 20	10	20
B	25	7.5YR3/2	CS	cobble / sm gravel	10 / 40	8	15
BC	13	7.5YR3/2	CS	cobble / gravel	30 / 30	5	

Total Depth: 50cm. Depth Limit: 50cm+. Water Table: 30cm.



Pretty large cobbles in the A horizon, about 10cm wide sometimes. Very sandy. The 3D drawing helps to show how these cobbles appear to be “suspended” in the sand. Really they were simply inundated by it. The transition to a B horizon was based on the size of the sand grains really, and a color change and addition of some clay. But mostly the size of the sand grains above vs. below the cobbles. About 7cm below the water table, the BC horizon begins (37-50cm). Basically I just stuck my hand down through the muck to find the depth at which the cobble begins again. They are pretty firmly in the muck down there. It makes me wonder if the cemented-cobble matrix I described from the last plot has liquefied here. If so, it may be possible for the cobbles to settle to the bottom forming the BC and the stream bottom.



Tiareella trifoliata
Foamflower
TITR

N=3 (WNF 2, MHNF 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-seedlings			
<i>Tsuga heterophylla</i>	Western hemlock	100	5
Shrubs			
<i>Rubus spectabilis</i>	Salmonberry	67	1
Herbs			
<i>Tiareella trifoliata</i>	Foamflower	100	13
<i>Galium aparine</i>	Cleaver	100	7
<i>Athyrium filix-femina</i>	Lady fern	100	2
<i>Claytonia sibirica</i>	Siberian miner's lettuce	100	Tr
<i>Anemone deltoidea</i>	Three-leaved anemone	67	8
<i>Polystichum munitum</i>	Sword fern	67	6
<i>Circaea alpina</i>	Enchanter's-nightshade	67	5
<i>Tolmiea menziesii</i>	Piggyback plant	67	3
<i>Mitella ovalis</i>	Oval-leaved mitrewort	67	2
<i>Galium triflorum</i>	Sweetscented bedstraw	67	1
<i>Montia parvifolia</i>	Streambank springbeauty	67	Tr

Elevations: 2740 to 3400 feet (average 3,165 feet).

Community: Foamflower is an herb dominated community of cooler, moderate elevation sites. Western hemlock seedlings were recorded on all plots, but no older trees were present. The shrub layer is nearly absent, though salmonberry may be in trace amounts. The herb layer is marked by dominance of saxifrages and ferns. Most prominent are foamflower, piggyback plant, oval-leaved mitrewort, lady fern and sword fern. Cleaver and Siberian miner's lettuce are constant associates. Important forbs include cleaver, three-leaved anemone, enchanter's nightshade, sweetscented bedstraw and streambank spring-beauty.

Geomorphic environment: This community is found in small patches on cobble bars, islands and lower banks. Two samples were within the silver fir zone. All samples were north of the North Santiam River.

Soil data are nearly lacking, though one plot had coarse sands in a matrix of cobbles.

Geomorphic surfaces, lack of larger trees, and coarse sands in cobbles indicate that this community is frequently reset by floods and does not support mature conifers or older hardwoods.



Foamflower community: note shrub cover is absent. Foamflower dominates the community.

Wetland rating:	Community meets wetland test	No
	Plots meeting wetland criteria	75%
	Wetland indicators among dominant species	24% (range 13-40%)

Similar types: This community is very similar to the Coast boykinia-oval-leaved mitrewort type. The Foamflower type is cooler and more northerly than the lower, warmer coast boykinia-dominated community that was sampled only south of the North Santiam River.

Valley cross sections showing TITR
Augusta creek #1
Augusta creek #5

Click on a creek name in the table to the left to see valley cross sections that show where TITR occurs in relation to other plant associations.

Non-natives: Wall-lettuce was the only exotic species recorded, on a single plot

Ribes bracteosum*/*Petasites frigidus
Stink currant/coltsfoot
RIBR/PEFR5

N=16 (MHN 12, WNF 3, SBLM 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red Alder	19	53
Trees-seedlings			
<i>Alnus rubra</i>	Red Alder	25	8
<i>Thuja plicata</i>	Western Redcedar	25	2
Shrubs			
<i>Ribes bracteosum</i>	Stink Currant	100	31
<i>Rubus spectabilis</i>	Salmonberry	75	8
Herbs			
<i>Petasites frigidus</i>	Coltsfoot	94	20
<i>Athyrium filix-femina</i>	Lady Fern	75	3
<i>Galium triflorum</i>	Sweetscented Bedstraw	75	1
<i>Stachys cooleyae</i>	Cooley's Betony	63	10
<i>Tolmiea menziesii</i>	Piggyback Plant	56	7
<i>Circaea alpina</i>	Enchanter's-Nightshade	56	2
<i>Oxalis</i>	Sorrel	50	5
<i>Claytonia sibirica</i>	Siberian Miner's Lettuce	44	2
<i>Bromus vulgaris</i>	Columbia Brome	38	7
<i>Lactuca muralis</i>	Wall-Lettuce	31	4

Elevations: 1390 to 3000 feet (average 2360 feet).

Community: Stink currant/coltsfoot is a shrub and herb dominated community of moderate elevations in the Cascades. The canopy is very open, tree cover averaging only 16%. Red alder occurred in the overstory, but in only 19% of the plots (canopy heights average 55 feet). Three cohorts of alders were aged on one Willamette NF plot (16 years, 20 years, 47 years), suggesting repeated floods. Stink currant is the dominant shrub. Coltsfoot and Cooley's betony are the most abundant herbs, with lady fern, sweetscented bedstraw, piggyback plant, enchanter's nightshade, and sorrel also present on the majority of the samples. Grasses are present in 75% of the plots, averaging 4% cover. Graminoids occur on 56% of the plots, slightly more abundant at 9% cover.

Geomorphic environment: Plots were on cobble bars and banks, islands, inactive channels, and active floodplains.

Soils are shallow (ave. 19cm) sand, gravelly sand, or cobbly sand over gravels and cobbles. Comments on some plots note: “small cobbles with sand and gravel between”, “pockets of gravelly sand around cobbles”. Several plots noted recent disturbance. Most plots showed <1 cm litter and no organic layer.

The Stink currant/coltsfoot community is near-channel level, by the stream or on overflow channels. The lack of litter and organic matter accumulation suggest winter flooding, though the presence of shrubs and some alder indicate that the surfaces have some stability and are not reset annually. Note the low salmonberry and sorrel cover compared to cobble substrates with more developed soils, and the dominance of the coltsfoot and Cooley’s betony typical of herb dominated channel margin types.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	85%
Wetland indicators among dominant species	82% (range 50-100%)

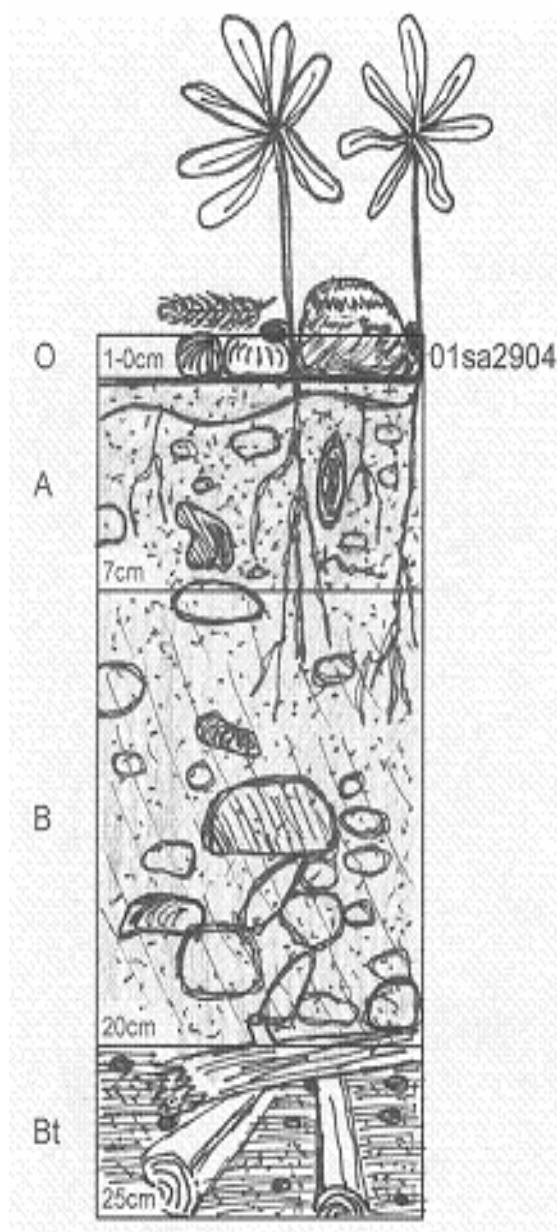
Non-natives: Wall-lettuce is the only recorded exotic species, on 31% of the plots at 4% average cover.

Other studies: This community is somewhat similar to two types previously been described for the Mt. Hood NF in Diaz and Mellen (1996): the ALRU/PEFR2 Plant Community (Ecoclass HAF223) and the RIBR-RUSP/PEFR2 Plant Association (Ecoclass SW5122).

Soil illustration: 01SA2904: RIBR/PEFR5

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	1			gravel / cobble	40 / 10	15	3
A	7	7.5YR3/1	S	gravel / cobble	25 / 30	10	8
B	13	7.5YR3/1	LS	gravel / cobble	25 / 25	8	5
Bt	5	7.5YR3/1	SC	gravel / cobble	10 / 10	3	3

Total Depth: 25cm. Depth Limit: 25cm to LWD. Water Table: ~30cm.



A horizon is very sandy and sand only with plenty of cobbles. Rhizomatus growth of colt's foot is aided by easily displaced soil. The hard candy shell of the A horizon is from sand and fines being washed out of the cracks in the cobble armor.

The B horizon is a switch from the clean-washed sand in the A to a sand which has accumulated enough OM to feel loamy. There was not enough clay to designate a Bt and the possibility of it being a buried A this close to the stream is slim. No stratification is obvious to split it further. Cobble distribution is about the same as in the A horizon.

Large woody debris resting on the previous stream bank was the impetus for this cobble bar formation and is the limiting factor in digging any deeper (50% of the horizon). We are not quite to the watertable, but we are below the stream. Decomposition and illuviation have clayed up the horizon. Few cobbles.